

WHAT IS CLAIMED IS:

1. A foam product having a density of from about 0.7 to less than 4 pcf (about 11 to 64 kg/cubic meter) comprising one or more irradiated linear ethylenic polymers blended with low density polyethylene.
2. The foam product of Claim 1 wherein said linear ethylenic polymers are selected from the group consisting of homopolymers of polyethylene; copolymers or terpolymers of ethylene monomers or oligomers and one or more alpha-olefins; copolymers and terpolymers of ethylene monomers or oligomers and monomers or oligomers selected from the group consisting of vinyl acetate, methyl methacrylate, maleic anhydride, acrylonitrile, isoprene, styrene, acrylic acid, and ionic salts of acrylic acid; and blends of one or more thereof.
3. The foam product of Claim 1 wherein said linear ethylenic polymers have branches resulting from irradiation and, in the case of copolymers and terpolymers, from the presence of nonethylenic monomers or oligomers.
4. A method for making an expanded cellular product, said method comprising the steps of:
 - (a) irradiating one or more ethylenic polymers other than low density polyethylene (LDPE) under conditions sufficient to reduce the melt index of the polymer by at least about 20% in the substantial absence of the formation of gels;
 - (b) forming a thermoplastic resin composition comprising said ethylenic polymer and a foaming agent; and
 - (c) expanding the thermoplastic resin composition into a cellular product having a density of from about 0.7 to less than about 8 pcf.
5. The method of Claim 4 wherein said irradiation occurs in an environment in which the active oxygen concentration is at least 15% by volume of the environment.
6. The method of Claim 4 wherein said irradiation occurs in air at ambient temperature.

7. The method of Claim 4 wherein said ethylenic polymer other than LDPE is irradiated at a dosage of from about 1 to about 4.0 Mrad at a rate of from about 1 to 10 Mrads per minute.

8. The method of Claim 4 wherein said ethylenic polymer is irradiated at a dosage of 2.77 Mrad for 40 to 45 seconds at 72°F.

9. The method of Claim 4 wherein said product has a density of from about 0.7 to less than 4 pcf.

10. The method of Claim 4 further comprising the step of mixing said ethylenic polymer with low density polyethylene either before or after the irradiating step, and wherein said ethylenic polymer is selected from the group consisting of polyethylenes other than low density polyethylene (LDPE); copolymers or terpolymers of ethylene monomers or oligomers and one or more alpha-olefins; copolymers and terpolymers of ethylene monomers or oligomers and monomers or oligomers selected from the group consisting of vinyl acetate, methyl methacrylate, maleic anhydride, acrylonitrile, isoprene, styrene, acrylic acid, and ionic salts of acrylic acid; blends of one or more thereof; and blends of one or more thereof with LDPE, wherein said ethylenic polymers other than LDPE are irradiated and substantially gel free.

11. A method for making a foam having a density of from about 0.7 to less than 4 pcf comprising the steps of treating a linear ethylenic polymer to increase the branching thereof, mixing the linear ethylenic polymer with low density polyethylene, and expanding the mixture to form the foam.

12. The method of Claim 11 wherein the step of treating is irradiating in the substantial absence of gels.

13. The method of Claim 11 wherein the mixture exhibits a single melting temperature range as determined by differential scanning calorimetry at a sample rate of about 10°C per minute for about a 5 mg sample.